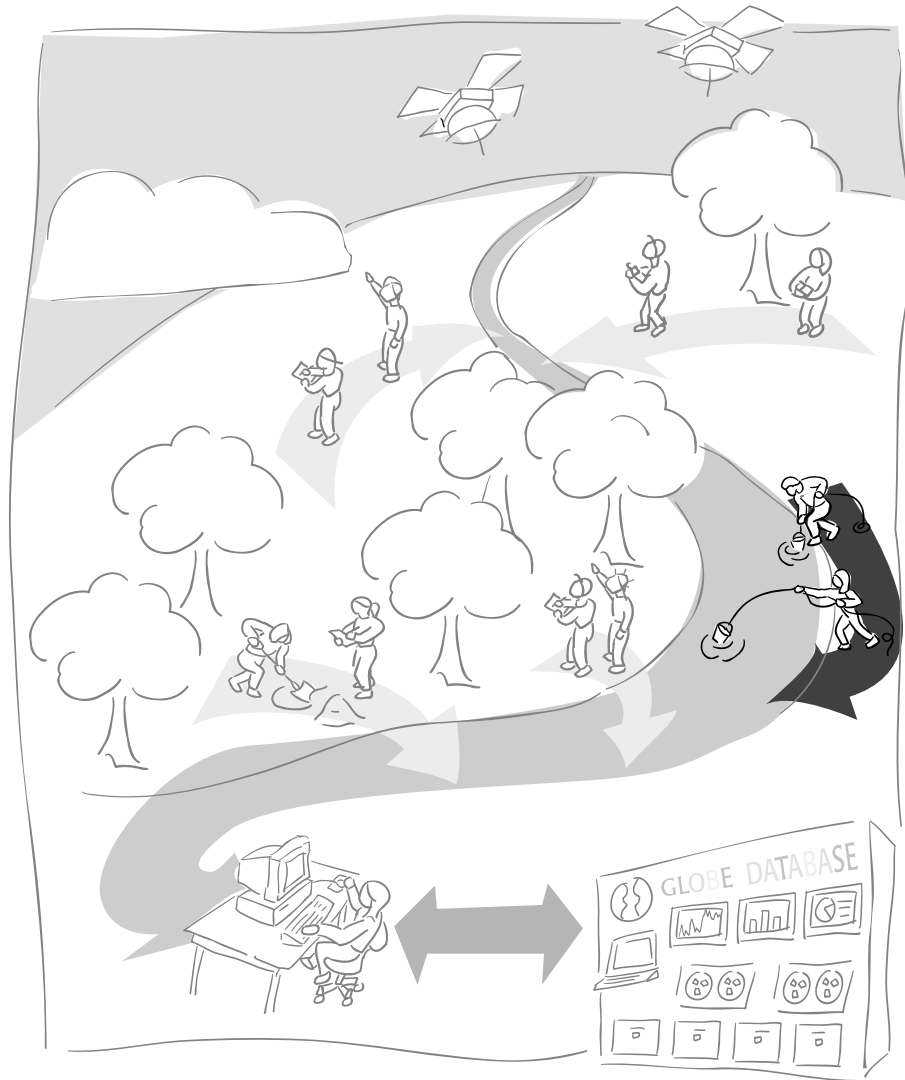


Hydrology Investigation



A GLOBE® Learning Investigation



Hydrology Investigation at a Glance



Protocols

Weekly Measurements

Basic
Transparency
Water Temperature
Dissolved Oxygen
Electrical Conductivity
Salinity
pH
Alkalinity
Nitrate

Optional Measurements

Salinity Titration (weekly)
Freshwater macroinvertebrates (twice a year)

Suggested Sequence of Activities

- Read the Introduction, especially the sections *What Measurements Are Taken* and *Getting Started*.
- The *Water Walk Learning Activity* sets the stage for developing a baseline knowledge and interest in your Hydrology Site.
- The *Model a Catchment Basin Learning Activity* provides the big picture view of the students' watershed and the water and study site in relation to this watershed.
- Map Your Hydrology Site. At the beginning of your study as part of defining your site, and once each year thereafter, create a map of the Hydrology Site and take photographs to send to GLOBE.
- The *Practicing Your Protocols Learning Activity* guides students through learning how to use the instruments and following the protocols so they collect reliable data.
- Begin Field Sampling. Go to the site and begin the weekly measurements for water.
- Use the *Looking at Data* section at the end of each protocol as a guide to examine your data, ask questions and interpret what you find. Start linking water data to other GLOBE measurements.
- Focus on Key Science Ideas by performing the following Learning Activities:
 - *Water Detectives* and *The pH Game* introduce students to key water chemistry variables and to the need using instruments to take certain measurements.
 - *Modeling Your Water Balance* lets students explore how to use their data for modeling.

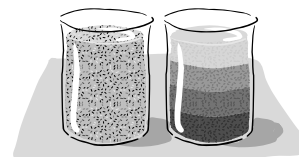




Table of Contents



Introduction

Why Investigate Surface Water?	Introduction 1
The Big Picture	Introduction 2
GLOBE Measurements	Introduction 3
Getting Started	Introduction 7

Protocols

Instrument Construction, Site Selection, Site Documentation and
Mapping, and Sampling Procedures

Water Transparency Protocol

Water Temperature Protocol

Dissolved Oxygen Protocol

Electrical Conductivity Protocol

Salinity Protocol

pH Protocol

Alkalinity Protocol

Nitrate Protocol

Optional Protocols

Freshwater Macroinvertebrates Protocol*

Rocky Substrates in Running Water

Multi-habitat (sampling a lake, pond, or stream with sandy or muddy bottom)

Marine Macroinvertebrates Protocol*

Salinity Titration Protocol*

Learning Activities

Water Walk*

Model a Catchment Basin

Practicing Your Protocols*

Water Detectives*

The pH Game

Modeling Your Water Balance

Appendix

Hydrology Site Definition Sheet

Appendix 2

Quality Control Procedure Data Sheet

Appendix 4

Hydrology Investigation Data Sheet

Appendix 5

Freshwater Macroinvertebrate Identification

Data Sheet

Appendix 9

Hydrology Site Map

Appendix 11

Glossary

Appendix 12



* See the full e-guide version of the *Teacher's Guide* available on the GLOBE Web site and CD-ROM.